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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,445	12/31/2001	Luca D'Ottone	LD01	4369

27797 7590 07/28/2005

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EXAMINER	
JASTRZAB, KRISANNE MARIE	

ART UNIT	PAPER NUMBER
1744	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/683,445	D'OTTONE, LUCA	
	Examiner	Art Unit	
	Krisanne Jastrzab	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burdine et al., US 2003/0101700 A1 in view O'Neill et al., '105 B1 and Hermann et al., "Decontamination of chemical and biological warfare (CBW) agents using an atimospheric pressure plasma jet (APPJ)*".

Burdine et al., teach method and apparatus for protecting against chemical and biological weapons, including Bacillus anthracis, wherein common structures are sealed and supplied with a separate enclosure which acts to treat all incoming air to remove any potential CBW therein. The separate enclosure receives the air through HEPA filtration then UV is applied via an electrical plasma discharge that produces a condition of intense UV light and produces free radicals including highly concentrated ozone and

nitrous oxides which act to decontaminate/destroy the CBW agents. The ozone and nitrous oxide released are not breathable and thus the decontaminated air is sent through a catalytic device which neutralizes the remaining free radicals. Burdine et al., is silent as to the concentration of free radicals produced, and to the presence of hydroxyl free radicals which are intrinsically produced with the production of ozone. See page 2, paragraph 0021, 0022, 0024 and 0028, page 3 paragraph 0029 and 0037, and page 4 paragraph 0042.

O'Neill et al., teach a similar method and apparatus for decontaminating chemical and biological agents by generating ozone with an ozone generator, mixing the ozone with water vapor and irradiating the mixture with UV radiation to generate hydroxyl radicals at concentrations on the order of 10^n molecules/cc, where n is 11. See column 2, lines 1-20, column 3, lines 1-20 and 35-65, column 4, lines 1-5, 18-22 and 35-40, column 5, lines 10-40.

Hermann et al., teach the destruction of CBW agents with the application of a plasma jet to vapor solutions such as hydrogen peroxide and/or water to create free radicals and that densities of 10^{16} molecules/cc are achieved. See the abstract, page 2285, "Biological decon", and page 2287, "V. Discussion", and page 2288, Table III and column 1.

It would have been obvious to one of ordinary skill in the art that hydroxyl free radicals are formed in the system of Burdine et al., as supported by O'Neill and that it would have been obvious to produce free radical densities on the order of 10^{16}

molecules/cc as taught in Hermann et al., because of the optimal efficacy such densities provide in combating CBW agents.

With respect to claims 6 and 18, the references are silent as to the temperature during the application of the method, however, it would have been obvious to one of ordinary skill in the art, requiring only routine experimentation, to determine those temperatures appropriate to the method without presenting detrimental secondary effects.

With respect to claims 13 and 15, Hermann et al., teach the presence of water vapor as claimed.

With respect to claims 14 and 17, Burdine et al., clearly teaches maintaining the enclosure at pressure conditions such that all air flow moves through the treatment space and it would have been well within the purview of one of ordinary skill in the art to determine through routine experimentation, what that pressure condition should be to ensure complete and effective treatment of the air.

With respect to claims 19 and 20, Burdine teaches the presence of hydrogen and nitrous dioxide as claimed.

Response to Arguments

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krisanne Jastrzab whose telephone number is 571-272-

1279. The examiner can normally be reached on Mon.-Wed. 6:30am-4:00pm and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Kim can be reached on 571-272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Krisanne Jastrzab
Primary Examiner
Art Unit 1744

July 25, 2005